

Abstract Submitted  
for the MAR17 Meeting of  
The American Physical Society

**Charge density wave order near the non-superconductor to superconductor phase transition in  $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$**  DAVID HAWTHORN, ANDREW ACHKAR, CHRISTOPHER MCMAHON, Univ of Waterloo, MARTIN ZWEIBLER, IFW Dresden, FEIZHOU HE, RONNY SUTARTO, Canadian Light Source, RUIXING LIANG, DOUG BONN, WALTER HARDY, Univ of British Columbia, JOCHEN GECK, TU Dresden — Using resonant x-ray scattering, we extend previous studies of the doping dependence of charge density wave (CDW) order in  $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$  (YBCO) to the heavily underdoped regime. We find that CDW order persists down to low doping ( $x = 0.335, p = 0.06$ ), close to the non-superconductor to superconductor phase transition and within a regime where static incommensurate spin density wave (SDW) order has been observed. Notably, at this low doping, the CDW order is unidirectional, propagating along the  $b$  axis but not along the  $a$  axis. Moreover, we identify a reduction of the  $a$ -axis correlation length,  $\xi_a$ , relative to the  $b$  axis correlation length,  $\xi_b$ , at low doping, indicative of a unidirectional character to CDW order in YBCO.

David Hawthorn  
Univ of Waterloo

Date submitted: 11 Nov 2016

Electronic form version 1.4